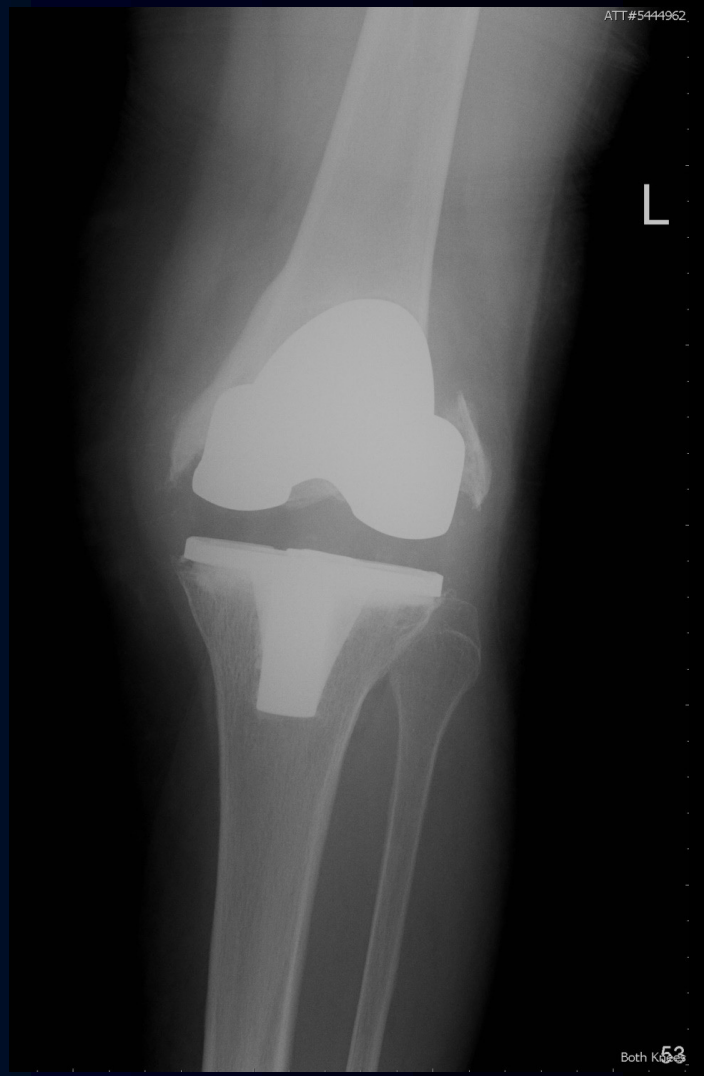
10th Advanced Course on Knee Surgery

Femoral fracture around a TKR



Sam Oussedik

Consultant Orthopaedic Surgeon, UCLH, London, UK

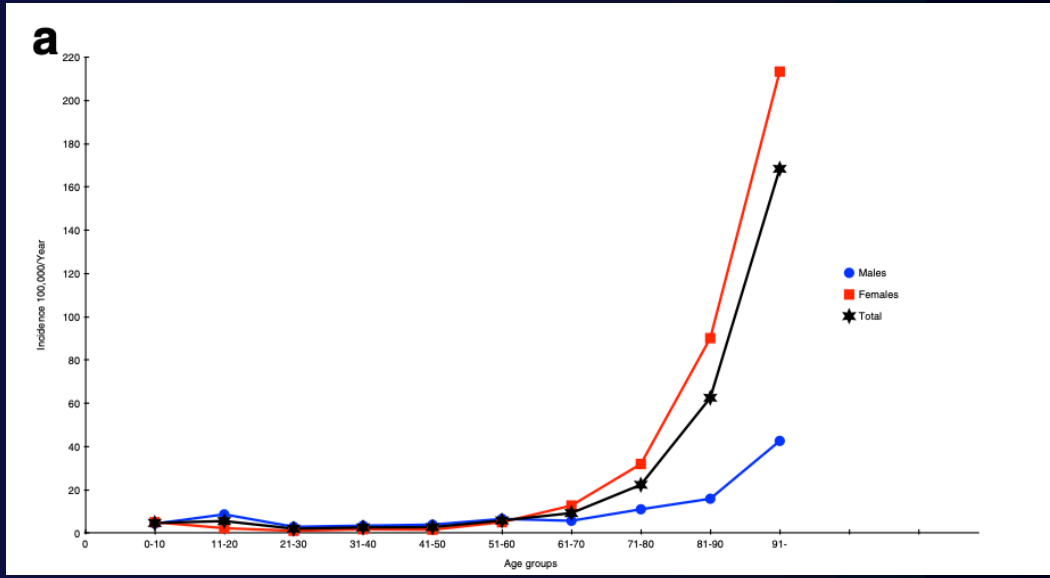
Hon. Assoc. Prof. UCL.

Incidence

Population-based epidemiology and incidence of distal femur fractures

Rasmus Elsoe[1] · **Adriano Axel Ceccotti**[1] · **Peter Larsen**[2]

International Orthopaedics (SICOT)

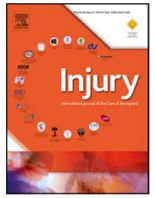


Mortality

Contents lists available at ScienceDirect

Injury

journal homepage: www.elsevier.com/locate/injury



Distal femur fractures have a higher mortality rate compared to hip fractures among the elderly: Insights from the National Trauma Data Bank

Sung Huang Laurent Tsai[a,b], Tung-Yi Lin[b,*], Eric H. Tischler[a,b,c], Kuo-Hsien Hung[b], Chien-Hao Chen[b], Greg Michael Osgood[a,d], Tsai-Sheng Fu[b], Chun-Yi Su[b]

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[b] *Department of Orthopaedic Surgery, Chang Gung Memorial Hospital, Keelung Branch, Keelung 204, and School of Medicine, Chang Gung University, Taoyuan 333, Taiwan*
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[d] *Department of Orthopaedic Surgery, Johns Hopkins Hospital, Baltimore, MD, United States*

Overview

- Fixing fracture impaired by prosthesis
- Revising prosthesis impaired by fracture

Overview

- Aim to produce skeletal stability & prosthetic stability
- Early weight bearing key to success
- Plan the procedure / equipment

Classification

■ KNEE

Periprosthetic fractures associated with total knee arthroplasty

AN UPDATE

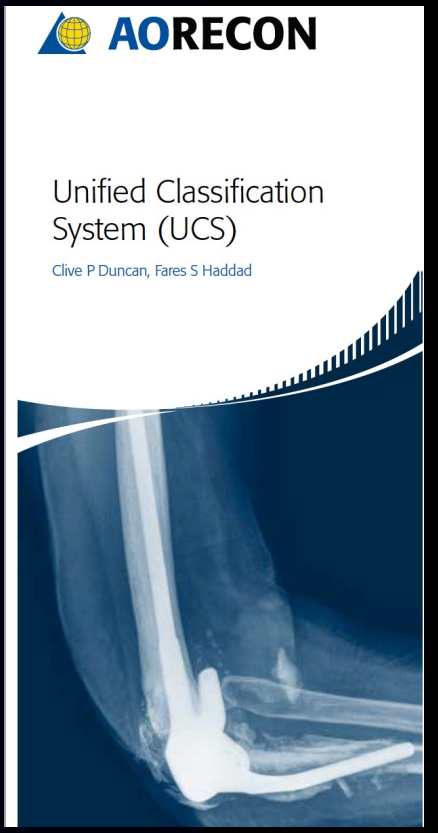
S. Konan,
N. Sandiford,
F. Unno,
B. S. Masri,
D. S. Garbuz,
C. P. Duncan

From University of

Fractures around total knee arthroplasties pose a significant surgical challenge. Most can be managed with osteosynthesis and salvage of the replacement. The techniques of fixation of these fractures and revision surgery have evolved and so has the assessment of outcome. This specialty update summarises the current evidence for the classification, methods of fixation, revision surgery and outcomes of the management of periprosthetic fractures associated with total knee arthroplasty.

Cite this article: *Bone Joint J* 2016;98-B:1489–96.

Type		V.3	V.4	V.34
		Femur, distal	Tibia, proximal	Patella
A *Apophyseal* or extraarticular/ periarticular	**A1** Avulsion of	Lateral epicondyle	Medial or lateral plateau, nondisplaced	Disrupted extensor, proximal pole
	A2 Avulsion of	Medial epicondyle	Tibial tubercle	Disrupted extensor, distal pole
B *Bed* of the implant or around the implant	**B1** Prosthesis stable, good bone	Proximal to stable stem, good bone	Stem and component stable, good bone	Intact extensor, implant stable, good bone
	B2 Prosthesis loose, good bone	Proximal to loose stem, good bone	Loose component/ stem, good bone	Loose implant, good bone
	B3 Prosthesis loose, poor bone or bone defect	Proximal to loose stem, poor bone, defect	Loose component/ stem, poor bone, defect	Loose implant, poor bone, defect
C *Clear* of or distant to the implant	–	Proximal to the implant and cement mantle	Distal to the implant and cement mantle	–
D *Dividing* the bone between two implants or interprosthetic or intercalary	–	Between hip and knee arthroplasties, close to the knee	Between ankle and knee arthroplasties, close to the knee	Between ankle and knee arthroplasties, close to the knee
E *Each* of two bones supporting one arthroplasty or polyperiprosthetic	–	Femur and tibia/patella		
F *Facing* and articulating with a hemiarthroplasty	–	Fracture of femoral condyle articulating with tibial hemiarthroplasty	–	Fracture of the patella that has no surface replacement and articulates with the femoral component of the total knee arthroplasty



Type C Fracture

- Fixation of femoral fractures by plate or nail
- Choice governed by prosthesis type (CR vs PS) and amount of bone available for screws
- Most PS don’t have lugs, most CR do
- CT (MARS) useful

Fixation

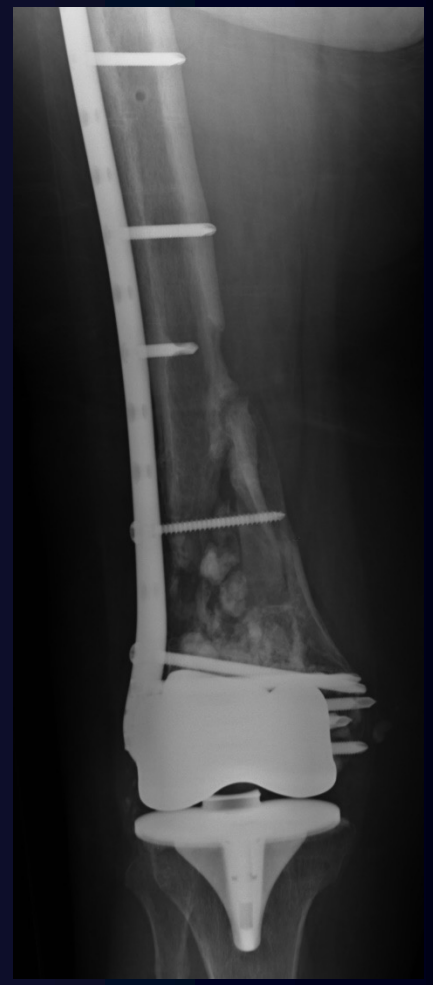
- Femoral nail for diaphyseal fractures with CR prosthesis

Type B

- Prosthesis stable?
- Bone stock adequate?
- Plate fixation for metaphyseal fractures and/or PS prosthesis

Fixation

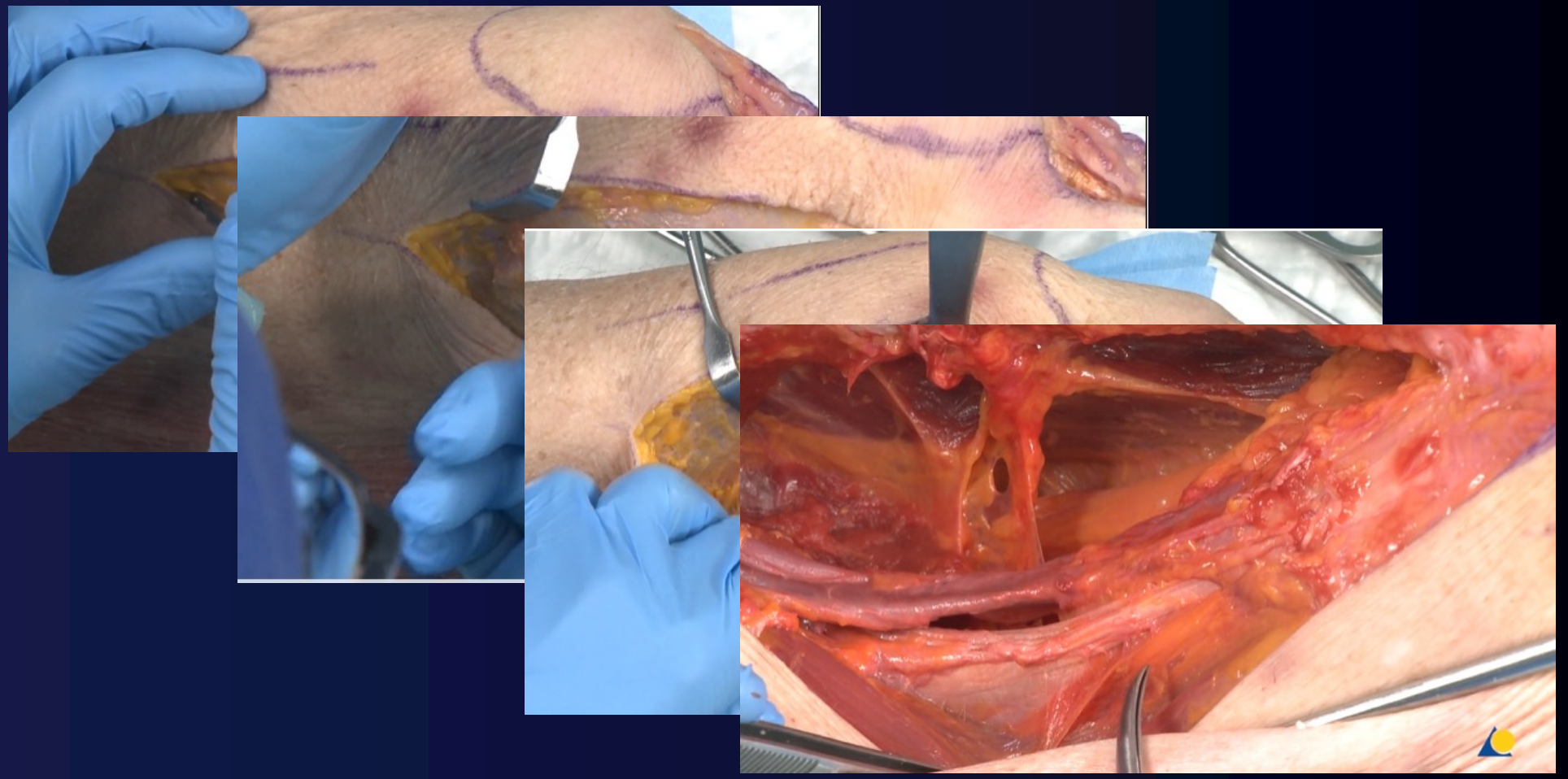
- However fixed, respecting soft tissues with MIS technique more important than perfect reduction
- Secondary bone healing, non-rigid constructs



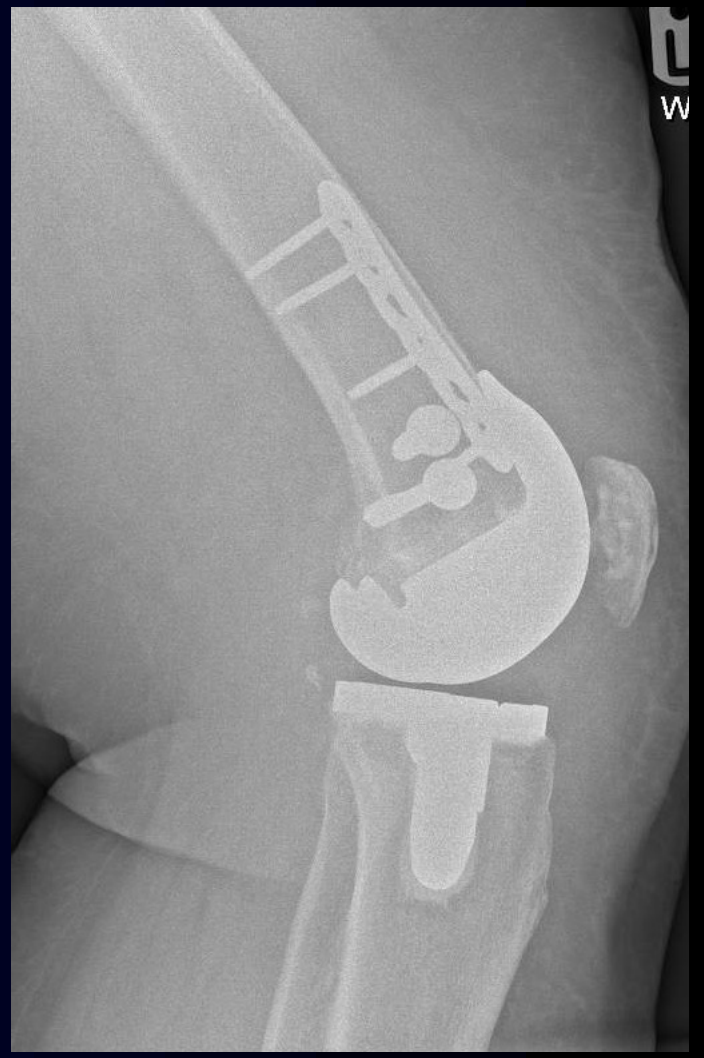
Fixation

- Consider medial plating if appropriate

Fixation

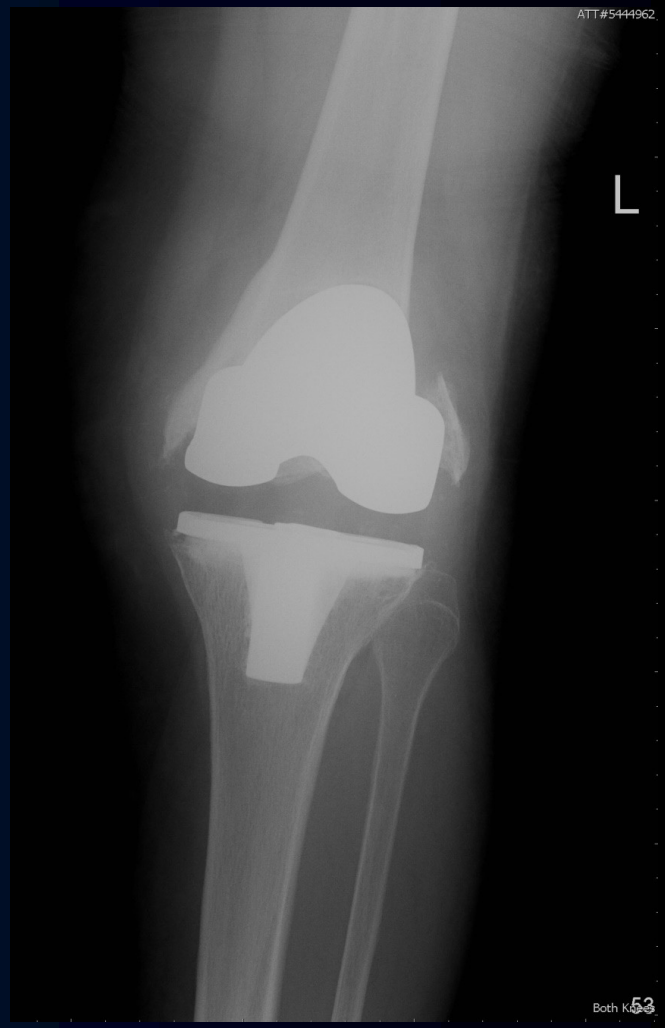


Fixation



Case 1

- 80 year old female
- Well functioning TKR
- Fall 3 months ago
- c/o pain, instability



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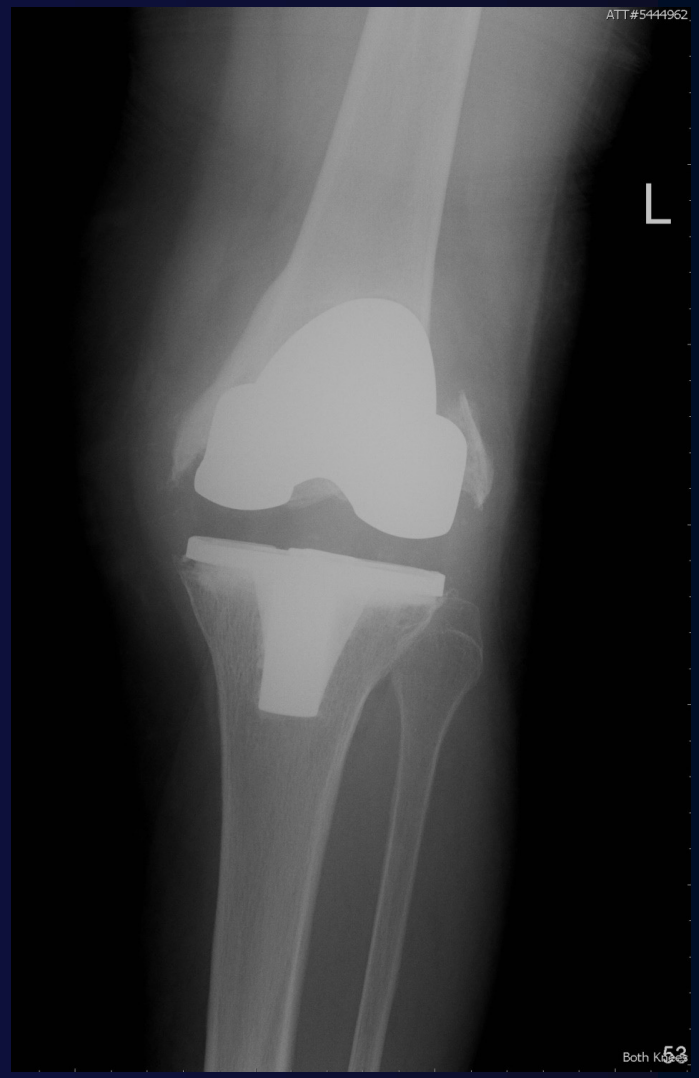
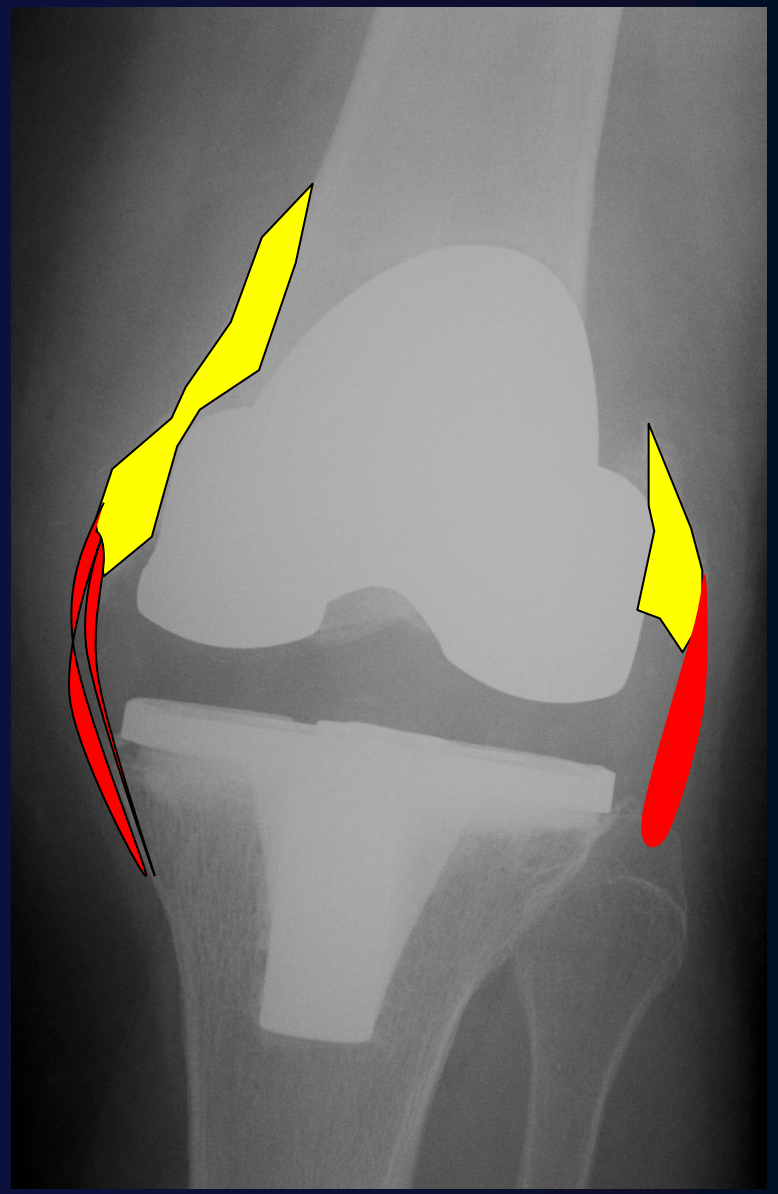
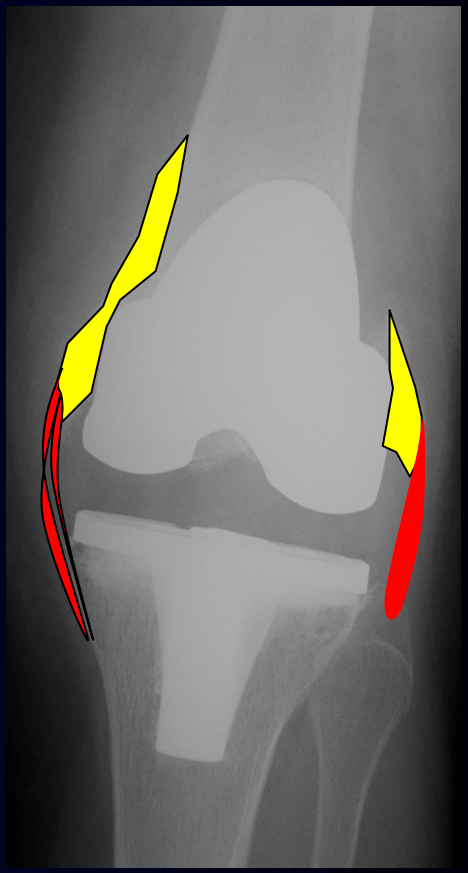




Case 1

- Diagnosis?
  - Unstable femoral PPF
  - Loss of collateral function



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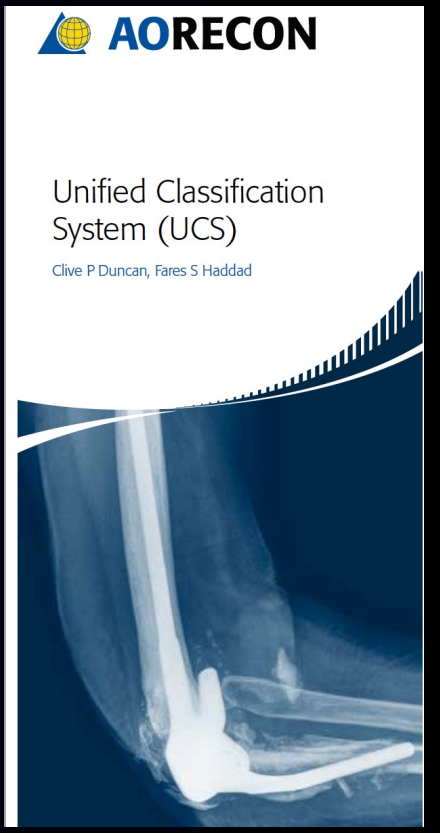
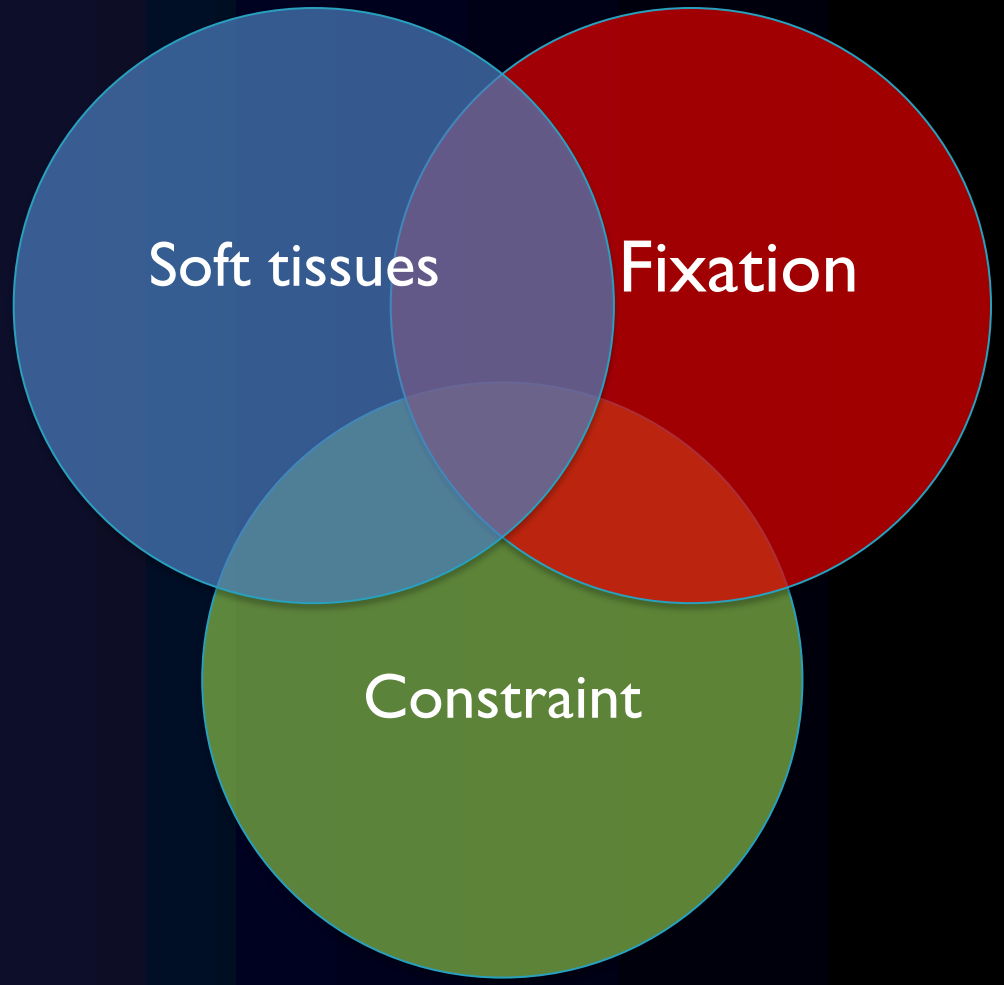


Case 1

- Management?

- Soft tissues
  - No skin issues
  - Collateral deficiency
- Constraint
  - Rotating hinge
- Fixation
  - Zones 1 & 3
  - Cemented stems?



Case 1

- Management?

- Soft tissues
  - No skin issues
  - Collateral deficiency
- Constraint
  - Rotating hinge
- Fixation
  - F: Zone 3
  - T: Zones 1 & 3

Outcomes

Acta Orthopaedica 2022; 93: 684–688

Lower mortality in distal femoral fractures in the presence of a knee arthroplasty: an observational study on 2,725 fractures from the Swedish Fracture Register

Björn HERNEFALK [1], Anders BRÜGGEMANN [1], Jabbar MOHAMMED [2], Sebastian MUKKA [2], and Olof WOLF [1]

Acta Orthopaedica

Outcomes

Factor	DFF (n = 2,075)	pDFF (n = 650)	Overall (n = 2,725)
Mean age (SD) at injury	80 (10)	81 (9)	80 (10)
Sex			
Female	1,716 (83)	528 (81)	2,244 (82)
Male	359 (17)	122 (19)	481 (18)
Trauma mechanism			
Fall from height	105 (5)	34 (5)	139 (5)
Fall same level	1,543 (74)	503 (77)	2,046 (75)
Other cause	119 (6)	39 (6)	158 (6)
MVA	80 (4)	14 (2)	94 (3)
Stress fracture	56 (3)	12 (2)	68 (3)
Unspecified fall	172 (8)	48 (7)	220 (8)
Trauma energy			
High energy	66 (3)	6 (1)	72 (3)
Low energy	1,727 (83)	574 (88)	2,301 (84)
Not applicable	56 (3)	12 (2)	68 (3)
Unknown	51 (3)	17 (3)	68 (3)
Missing	175 (8)	41 (6)	216 (8)
Treatment			
Amputation	14 (1)	15 (2)	29 (1)
Arthroplasty	14 (1)	19 (3)	33 (1)
Non-operative	537 (26)	110 (17)	647 (24)
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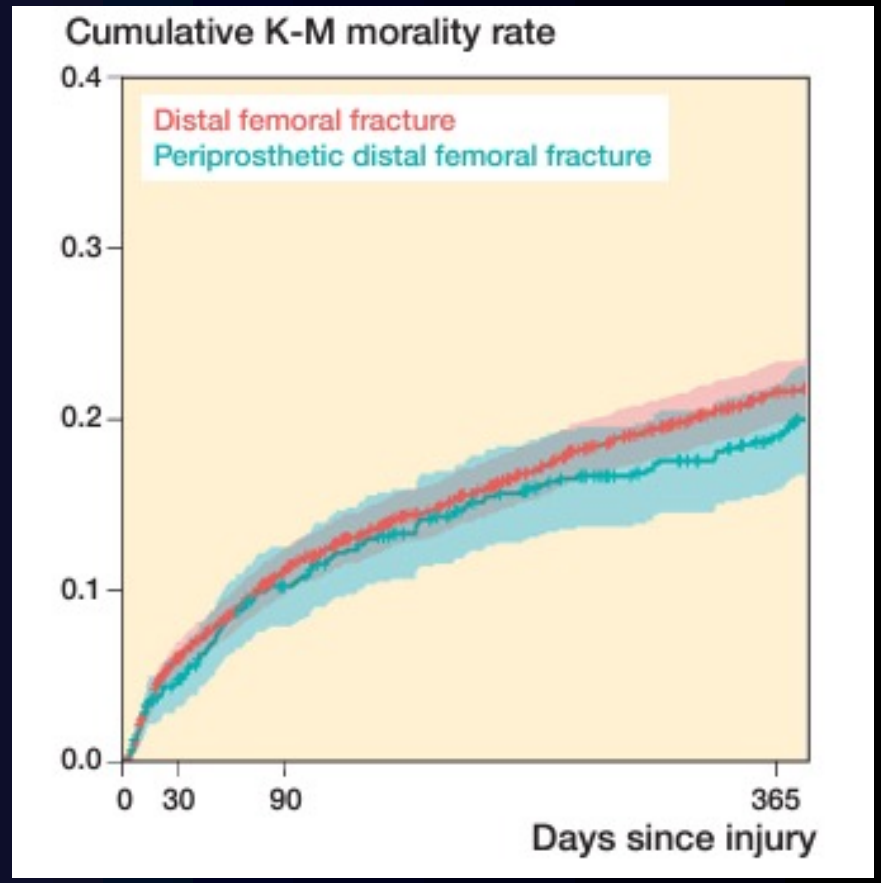

Acta Orthopaedica 2022; 93: 684–688 684

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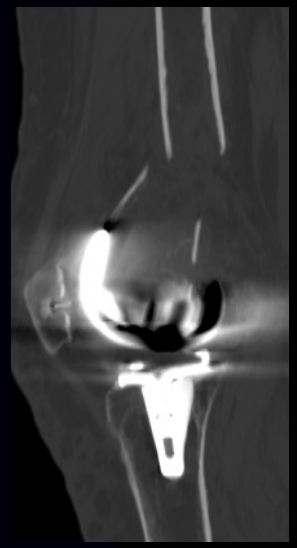
Acta Orthopaedica

Summary

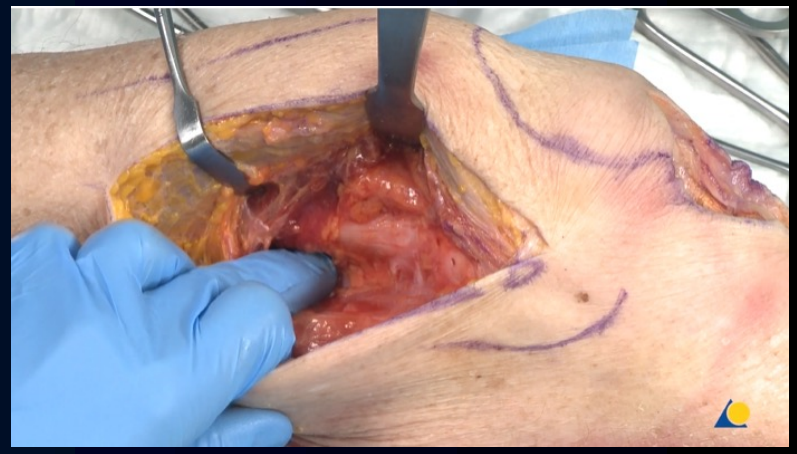
- Treatment goal is to allow early weight bearing by producing a robust construct
- This may involve fixing the bone, revising the implants or both
- Assess implant stability and bone stock

B1 Prosthesis sta good bone	Proximal to stable stem, good bone
B2 Prosthesis lo bone	Proximal to loose stem, good bone
B3 Prosthesis lo bone or bone	Proximal to loose stem, poor bone, defect



Summary

- Have all the kit you might require ready and available
- Variable angle plates very useful to avoid implants
- Respect the soft tissues to improve chances of union



Thank you

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